

What is claimed is:

1. A fuel injector having a fuel inlet, a fuel outlet, and a fuel passageway extending from the fuel inlet to the fuel outlet along a longitudinal axis, the fuel injector comprising:
a body having an inlet portion, an outlet portion, and a neck portion disposed between the inlet portion and the outlet portion;
an armature adjacent the inlet portion of the body;
a needle operatively connected to the armature;
a seat proximate the needle having a first face, a second face, and a circumferential surface disposed between the first face and the second face, the circumferential surface including a first zone and a second zone that are connected by an intermediate zone, the intermediate zone engaging the body; and
a seal disposed between the second zone of the seat and the body that thermally isolates the second zone of the seat from the body.

2. The fuel injector according to claim 1, wherein the body includes a retention member that engages the intermediate zone of the seat.

3. The fuel injector according to claim 2, wherein the retention member includes a surface that engages the intermediate zone of the seat to define a first contact area between the body and the seat.

4. The fuel injector according to claim 3, wherein the retention member comprises a crimped section on the neck portion and is disposed at the outlet portion of the body.

5. The fuel injector according to claim 1, further comprising:
a swirl generator disk comprising a first surface and a second surface, the first surface of the swirl generator disk adjacent the armature, the second surface of the swirl generator disk adjacent the first face of the seat; and

5 a guide disk comprising a first surface and a second surface, the first surface of the
a guide disk adjacent the armature, the second surface of the guide disk adjacent the first face
of the swirl generator disk.

6. The fuel injector according to claim 5, wherein the swirl generator disk and the guide
disk define a second contact area between the body and the seat.

7. The fuel injector according to claim 1, wherein the seal comprises
polytetrafluoroethylene.

8. A body and a seat for a fuel injector having a fuel inlet, a fuel outlet, and a fuel
passageway extending from the fuel inlet to the fuel outlet along a longitudinal axis, the body
and the seat comprising:

5 a body having an inlet portion, an outlet portion, and a neck portion disposed between
the inlet portion and the outlet portion; and

03 a seat having a first face, a second face, and an circumferential surface disposed
between the first face and the second face, the circumferential surface including a first zone
and a second zone that are connected by an intermediate zone, the intermediate zone engaging
the body and the second zone being thermally isolated from the body.

9. The body and the seat according to claim 8, wherein the body includes a retention
member having a surface engaging the intermediate zone of the seat, the surface of the
retention member defining a first contact area between the body and the seat.

10. The body and the seat according to claim 9, further comprising:
a swirl generator disk comprising a first surface and a second surface, the first surface of the swirl generator disk adjacent the inlet portion of the body, the second surface of the swirl generator disk adjacent the first face of the seat; and
5 a guide disk comprising a first surface and a second surface, the first surface of the guide disk adjacent the inlet portion of the body, the second surface of the guide disk adjacent the first face of the swirl generator disk.

11. The body and seat according to claim 8, further comprising:
a seal disposed between the second zone of the seat and the body, the seal thermally isolating the seat from the body.

12. A method of forming a fuel injector having a fuel inlet, a fuel outlet, a fuel passageway extending from the fuel inlet to the fuel outlet along a longitudinal axis, a body having an inlet portion, an outlet portion, and a neck portion disposed between the inlet portion and the outlet portion, and a seat having a first face, a second face, and a circumferential surface disposed between the first face and the second face, the circumferential surface including a first zone and a second zone that are connected by an intermediate zone, the method comprising:
5 engaging the intermediate zone of the seat with the body; and
thermally isolating the second zone of the seat from the body.

13. The method according to claim 12, further comprising:
disposing a seal between the second zone of the seat and the body to thermally isolate the seat from the body.

14. The method according to claim 12, further comprising:
retaining the intermediate zone of the seat and the body with a retention member.

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15. The method according to claim 14, wherein the retention member comprises a surface that engages the intermediate zone of the seat to define a first contact area between the body and the seat.

16. The method according to claim 15, wherein the retention member includes a crimped section on the neck portion and is disposed at the outlet portion of the body.

17. The method according to claim 12, wherein the seal comprises polytetrafluoroethylene.